Former Rich Hill Compressor Station
Characterization Report

Muskingum County, Ohio

May 14, 1999

Prepared for Columbia Gas Transmission Corporation
By:

BAKER ENVIRONMENTAL, INC.

(b) (4) [redacted]

Principal in Charge

Manager in Charge

ENVIRONMENTAL STANDARDS, INC.

(b) (4) [redacted]

Data Management and Verification Manager

Data Validation Manager

2.0 ENVIRONMENTAL SETTING

2.1 Physical Setting

The Former Rich Hill CS is in an undeveloped area of low to moderate topographic relief. The station does not appear to be in a flood-prone area, however, there is a small unnamed tributary to Buffalo Fork crossing immediately adjacent to SR 146. The unnamed tributary base levels are approximately 780 feet above mean sea level (MSL), while ridge tops range from 800 feet to more than 1,000 feet MSL. The CS is approximately 800 feet above MSL (USGS, Norwich Quadrangle 1989). The operating portion of this compressor station occupies less than one-quarter acre. It is a rectangular area approximately 75 feet by 60 feet. There are no gates, fences, or CS buildings.

The ground surface at the CS consists of gravel and grass and slopes downward losing approximately five feet in elevation over approximately 100 feet in distance (northeast of the CS). Land use in the vicinity of the CS (within 1,000 feet) includes an unnamed tributary and SR 146 to the north, woodlands to the south and east, and an unrelated compressor station and woodlands to the west.

2.2 Climate

The portion of Ohio in which the CS is located receives mean annual precipitation of approximately 37 inches. Prevailing winds are generally from the south. Temperatures vary widely, with average lows during the winter months reaching 21 degrees Fahrenheit to highs during the summer months reaching 82 degrees Fahrenheit. The greatest levels of precipitation occur in the spring, while the lowest levels occur in late summer (Soil Survey of Muskingum County, Ohio, 1996).

2.3 Surface Water Hydrology

The CS does not appear to be in a flood-prone area, however, there is a small unnamed tributary crossing topographically downgradient, immediately adjacent to SR 146. This unnamed tributary flows west to Buffalo Fork, which then discharges into Salt Creek (USGS, 1984). Surface drainage, based on elevation contours, flows northeast toward the unnamed tributary. However, there does not appear to be a predominant drainage pathway.

2.4 Geology and Soils

The Former Rich Hill CS is located on the unglaciated, dissected Allegheny Plateau Physiographic Province (Figure 2-1). The bedrock of this region is sedimentary, consisting of mainly Pennsylvanian System/Conemaugh Group bedrock. The bedrock consists mainly of shale, siltstone, mudstone, limestone, and coal with the bedrock thickness ranging between 350 and 490 feet.

Soils at the Former Rich Hill CS are identified as Westmoreland-Guernsey silt loam, 15 to 25 percent slopes, eroded (WuD2). This series consists of deep, moderately steep soils on dissected hillsides and benches. Soils are typically well drained near the ground surface, but become more clayey and less permeable with depth as silty clays are encountered. (Soil Survey of Muskingum County, Ohio, 1996).

2.5 Hydrogeology and Groundwater Quality

In valley bottoms, useable quantities of groundwater are generally obtained from both shallow dug wells in unconsolidated deposits and/or deeper wells installed into bedrock formations. In other topographic areas, wells completed in bedrock or springs are a source of potable water supplies.

The county is drained by the Muskingum River and its main tributaries, the Licking River, and several creeks, including Salt Creek. The supply of groundwater is limited in most of the county. The principal source of groundwater is recharge from local precipitation. Flood plains along the Muskingum River serve as a source of groundwater through extraction wells. In outlying areas, wells placed in fill of valley bottoms are limited due to contamination from area mine waste. In upland areas, groundwater wells generally withdraw from the Pennsylvanian-age sandstones (Soil Survey of Muskingum County, 1996).

Because groundwater was not encountered during the Geoprobe® boring advancement portion of the characterization field activities (maximum depth of 11.2 feet bgs), detailed information on the Site specific hydrogeology and groundwater quality of the subject property is not readily available. However, based upon the topographic position of the CS, it can be reasonably assumed that the depth

UNDERLYING THE CS IS PENNSYLVANIAN SYSTEM/CONEMAUGH GROUP BEDROCK. (CONSISTING OF SHALE, SILTSTONE, MUDSTONE, LIMESTONE, AND COAL; NONBEDDED TO MASSIVE; 350 FEET TO 490 FEET THICKNESS)(IPc) ALSO IN CLOSE PROXIMITY TO THE CS IS THE PENNSYLVANIAN SYSTEM/MONONGAHELA GROUP BEDROCK (CONSISTING OF SHALE, SILTSTONE, LIMESTONE, SANDSTONE AND COAL; NONBEDDED TO MASSIVE 350+ FEET THICKNESS)(IPm)

SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAP, NORWICH QUADRANGLE, OHIO;

2000 0 1000 2000

1 inch = 2000 ft.

QUADRANGLE LOCATION

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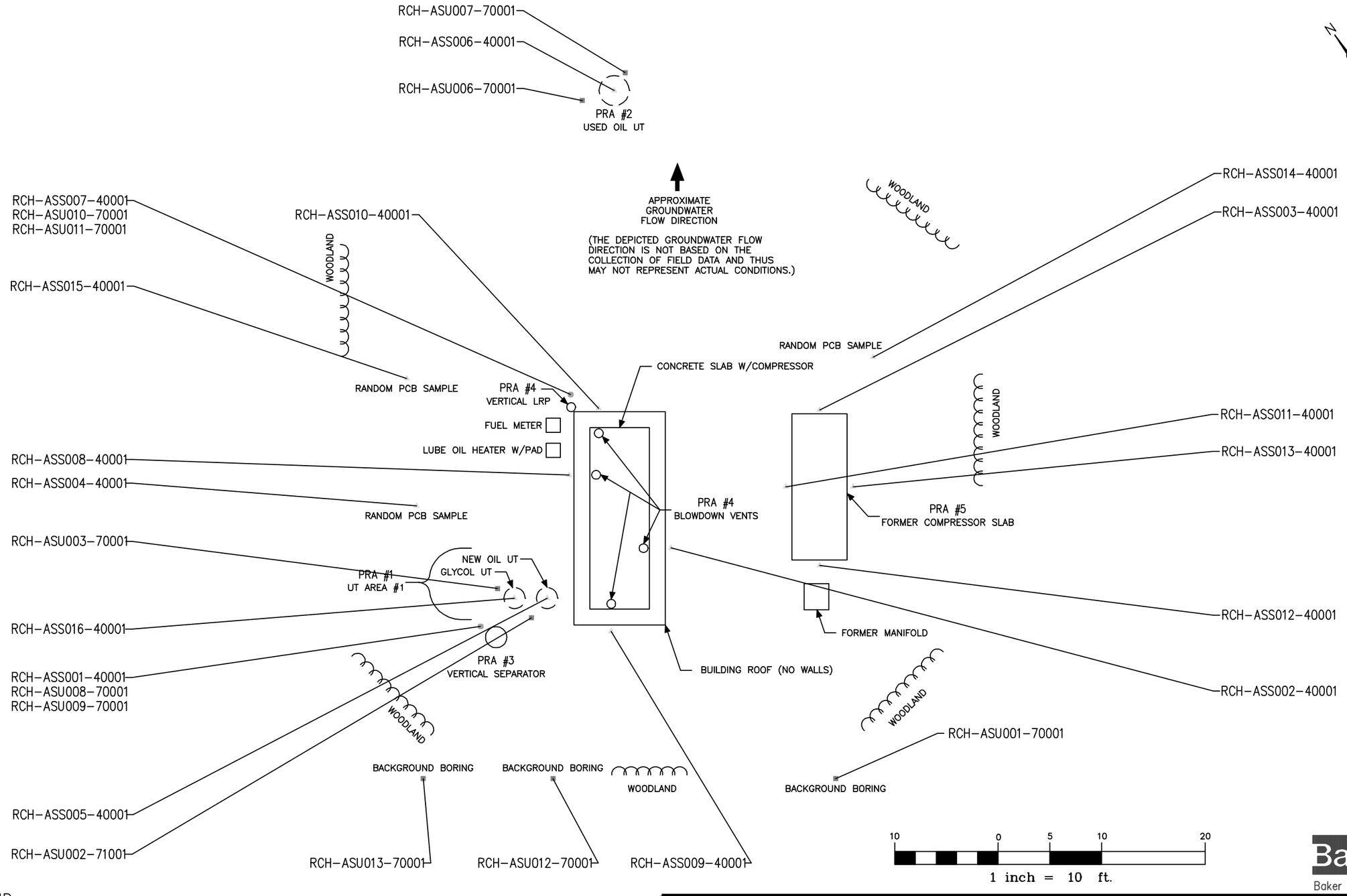
FIGURE 2-1
SITE GEOLOGY
FORMER RICH HILL COMPRESSOR STATION

COLUMBIA GAS TRANSMISSION CORPORATION
MUSKINGUM COUNTY, OHIO

REV: 0, 10/28/97

22603F09



Baker
Baker Environmental Inc.

LEGEND

- – SURFACE AND AT DEPTH SOIL SAMPLE LOCATION
- – SURFACE SOIL/SEDIMENT SAMPLE LOCATION
- – AT DEPTH SOIL SAMPLE LOCATION

SCALE:	1" = 10'	DATE:	05/14/99
S.O. NO.:	22603-RIC-0000-06000	FILE:	22603F09
REV:	0, 10/28/97	CHK:	

FIGURE 3-1
SAMPLE LOCATION MAP
FORMER RICH HILL COMPRESSOR STATION

Table 4-3
Summary of Analytical Results

		PRA	1					
		PRA Description	PRA #1 UT AREA #1					
		Sample Type	Field Duplicate (Rep)		Normal Sample			
		Sample Id	RCH-ASU002-71001		RCH-ASS005-40001		RCH-ASS016-40001	
		Depth - ft bgs	8.1 - 9.1		0 - 1		0 - 1	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500			96.9			
	BERYLLIUM, TOTAL	160			ND			
	CHROMIUM, TOTAL	230			14.6			
	LEAD, TOTAL	400			ND			
	NICKEL, TOTAL	1600			21.2			
	ARSENIC, TOTAL	.43			7.2 J	X		
INORGANIC	PETROLEUM HYDROCARBON		ND		ND		710	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA					2	
		PRA Description					PRA #2 UT AREA #2	
		Sample Type					Normal Sample	
		Sample Id	RCH-ASU002-70001		RCH-ASU003-70001		RCH-ASS006-40001	
		Depth - ft bgs	8.1 - 9.1		9.3 - 10.3		0 - 1	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500					30.4	
	BERYLLIUM, TOTAL	160					ND	
	CHROMIUM, TOTAL	230					5.4	
	LEAD, TOTAL	400					ND	
	NICKEL, TOTAL	1600					11.6	
	ARSENIC, TOTAL	.43					7.1 J	X
INORGANIC	PETROLEUM HYDROCARBON		ND		ND			

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA					3	
		PRA Description					PRA #3 SEPARATOR	
		Sample Type					Normal Sample	
		Sample Id	RCH-ASU006-70001		RCH-ASU007-70001		RCH-ASS001-40001	
		Depth - ft bgs	9.8 - 10.8		10.2 - 11.2		0 - 1	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500	117		118			
	BERYLLIUM, TOTAL	160	ND		ND			
	CHROMIUM, TOTAL	230	25.1		27.3			
	LEAD, TOTAL	400	28.4		ND			
	NICKEL, TOTAL	1600	36.1		32.3			
	ARSENIC, TOTAL	.43	15.3 J	X	4.7 J	X		
INORGANIC	PETROLEUM HYDROCARBON						ND	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA						
		PRA Description						
		Sample Type						
		Sample Id	**RCH-ASS007-40001**		**RCH-ASU008-70001**		**RCH-ASU009-70001**	
		Depth - ft bgs	**0 - 1**		**1.5 - 2.5**		**4 - 5**	
		Result Units	**MG/KG**		**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	LEAD, TOTAL	400						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	**PETROLEUM HYDROCARBON**		ND		ND		ND	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA					4	
		PRA Description					PRA #4 BLOWDOWNS/VENTS/V	
		Sample Type					Normal Sample	
		Sample Id	RCH-ASU010-70001		RCH-ASU011-70001		RCH-ASS002-40001	
		Depth - ft bgs	1.5 - 2.5		4 - 5		0 - 1	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	LEAD, TOTAL	400						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	PETROLEUM HYDROCARBON		ND		ND		160	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA						
		PRA Description	**ERTICAL LRP**					
		Sample Type						
		Sample Id	**RCH-ASS008-40001**		**RCH-ASS009-40001**		**RCH-ASS010-40001**	
		Depth - ft bgs	**0 - 1**		**0 - 1**		**0 - 1**	
		Result Units	**MG/KG**		**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	LEAD, TOTAL	400						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	**PETROLEUM HYDROCARBON**		3100		66.0		ND	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA	5					
		PRA Description	PRA #5 OLD PAD AREA					
		Sample Type	Field Duplicate (Rep)		Normal Sample			
		Sample Id	RCH-ASS013-41001		RCH-ASS003-40001		RCH-ASS011-40001	
		Depth - ft bgs	0 - 1		0 - 1		0 - 1	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	LEAD, TOTAL	400						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	PETROLEUM HYDROCARBON		ND		13.0		110	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA					6	
		PRA Description					BACKGROUND	
		Sample Type					Normal Sample	
		Sample Id	RCH-ASS012-40001		RCH-ASS013-40001		RCH-ASU001-70001	
		Depth - ft bgs	0 - 1		0 - 1		1 - 3	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500					134	
	BERYLLIUM, TOTAL	160					1.7	
	CHROMIUM, TOTAL	230					26.9	
	LEAD, TOTAL	400					ND	
	NICKEL, TOTAL	1600					38.6	
	ARSENIC, TOTAL	.43					10.6 J	X
INORGANIC	PETROLEUM HYDROCARBON		52.0		ND			

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA					7	
		PRA Description					PRA #7 RANDOM PCB SAMPLES	
		Sample Type					Normal Sample	
		Sample Id	RCH-ASU012-70001		RCH-ASU013-70001		RCH-ASS004-40001	
		Depth - ft bgs	1 - 3		1 - 3		0 - .5	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500	108		163			
	BERYLLIUM, TOTAL	160	ND		1.9			
	CHROMIUM, TOTAL	230	24.0		30.8			
	LEAD, TOTAL	400	ND		ND			
	NICKEL, TOTAL	1600	26.7		36.0			
	ARSENIC, TOTAL	.43	5.8 J	X	13.5 J	X		
INORGANIC	PETROLEUM HYDROCARBON							

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA				
		PRA Description	S			
		Sample Type				
		Sample Id	**RCH-ASS014-40001**		**RCH-ASS015-40001**	
		Depth - ft bgs	**0 - .5**		**0 - .5**	
		Result Units	**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500				
	BERYLLIUM, TOTAL	160				
	CHROMIUM, TOTAL	230				
	LEAD, TOTAL	400				
	NICKEL, TOTAL	1600				
	ARSENIC, TOTAL	.43				
INORGANIC	**PETROLEUM HYDROCARBON**					

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

APPENDIX F

CS Boring Logs

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA1-Boring A
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe

	MC Liners	Casing	Augers	Core Barrel
Size (ID)	1-5/8" I.D.	---	--	--
Length	4.0 feet	---	--	--
Type	---	---	--	--
Hammer Wt.	---	--	--	--
Fall	---	--	--	--

Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
2/3/1997	0.0 - 9.1	Cloudy 47F	--

Remarks: Sampled for Glycol, TDH and BTEX

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1					Mottled clay w/trace silt & small gravels; red-brown(clay), moist, med.-high plasticity		
2							
3							
4	N						
5					@ 5' gravels more red-brown		
6							
7							
8	8.1				8.1		
9	9.1		RCH-ASU 002-71001	0.0	very weathered shale @ 8.6' 9.1		
10					Bottom of Boring 9.1' **REFUSAL at 9.1'**		

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)

BAKER REP.: (b) (4)
BORING NO.: PRA1-Boring A SHEET 1 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA1-Boring B
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/3/1997	0.0 - 10.3	Cloudy 47F	--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Sampled for Glycol,TDH and BTEX

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1							
2							
3							
4	N						
5							
6							
7							
8							
9	9.3				9.3		
10	10.3		RCH-ASU 003-70001	0.0	**REFUSAL** at 10.3' 10.3		

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)
BAKER REP.: (b) (4)
BORING NO.: PRA1-Boring B SHEET 1 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA2-Boring A
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/3/97	0.0 - 5.0	cloudy 47F	--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Northeast of PRA 4/ between site and road/ used oil UT

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1–9	N						
9.8						9.8	
10	S-1		RCH-ASU	0.0	Shale below clay 10.8'		

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)
BAKER REP.: (b) (4)
BORING NO.: PRA2-Boring A SHEET 1 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
CTO NO.: 22603-RIC
BORING NO.: PRA2-Boring A

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11 10.8	S-1			006-70001	0.0	MS/MSD sample for clay 10.8		
12						Bottom of boring 10.8' (Refusal @ 10.8')		
13						Continued from Sheet 1		
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)

BAKER REP.: (b) (4)
BORING NO.: PRA2-Boring A SHEET 2 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA2-Boring B
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/3/97	0.0 - 5.0	cloudy 47F	--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Northeast of PRA 4/ between site and road/ used oil UT

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1							
2							
3							
4							
5	N						
6							
7							
8							
9							
10	10.2		RCH-ASU		10.2		

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)
BAKER REP.: (b) (4)
BORING NO.: PRA2-Boring B SHEET 1 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
CTO NO.: 22603-RIC
BORING NO.: PRA2-Boring B

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11 – 11.2	S-1			007-70001	0.0	11.2		
12						Bottom of boring 11.2'		
13						Continued from Sheet 1		
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)

BAKER REP.: (b) (4)
BORING NO.: PRA2-Boring B

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA3
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/3/97	0.0 - 5.0	cloudy 47F	--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Upgradient of the separator/drilling next to LRP off northern corner of slab (TPH/BTEX, 2 jars per sample)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1 – 1.0	S-1		RCH-ASS-001-40001	0.0			
1.5	N						
2 – 2.5	S-2		RCH-ASU-008-70001	0.0			
3 – 4.0	N						
5 – 5.0	S-3		RCH-ASU-009-70001	0.0			
6					Bottom of Boring at 5.0'		
7							
8							
9							
10							

5.0

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)
BAKER REP.: (b) (4)
BORING NO.: PRA3
SHEET 1 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA4
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/3/97	0.0 - 5.0	cloudy 47F	--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Drilling next to LRP

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1 – 1.0	S-1		RCH-ASS-007-40001	0.0			
1.5	N						
2 – 2.5	S-2		RCH-ASU-010-70001	0.0			
3 – 4 – 4.0	N						
5 – 5.0	S-3		RCH-ASU-011-70001	0.0			
6					Bottom of Boring at 5.0'	5.0	
7							
8							
9							
10							

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)
BAKER REP.: (b) (4)
BORING NO.: PRA4 SHEET 1 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA6-Boring A
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/3/97	0.0 - 3.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Background Samples-Table 1

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1 1.0	N						
2	S-1		RCH-ASU-001-70001	0.0	1.0		
3 3.0					3.0		
4					Bottom of Boring at 3.0'		
5							
6							
7							
8							
9							
10							

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)
BAKER REP.: (b) (4)
BORING NO.: PRA6-Boring A SHEET 1 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA6-Boring B
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe

	MC Liners	Casing	Augers	Core Barrel
Size (ID)	1-5/8" I.D.	---	--	--
Length	4.0 feet	---	--	--
Type	---	---	--	--
Hammer Wt.	---	--	--	--
Fall	---	--	--	--

Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
2/3/97	0.0 - 3.0		--

Remarks: Background Samples-Table 1

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1 - 1.0	N						
2 - 3.0	S-1		RCH-ASU-012-70001	0.0	1.0 3.0		
4					Bottom of Boring at 3.0'		
5							
6							
7							
8							
9							
10							

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)
BAKER REP.: (b) (4)
BORING NO.: PRA6-Boring B SHEET 1 OF 1

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Rich Hill Compressor Station
SO NO.: 22603-RIC
BORING NO.: PRA6-Boring C
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/3/97	0.0 - 3.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Background Samples-Table 1

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1 1.0	N				1.0		
2	S-1		RCH-ASU-013-70001	0.0			
3 3.0					3.0		
4					Bottom of Boring at 3.0'		
5							
6							
7							
8							
9							
10							

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4)
BAKER REP.: (b) (4)
BORING NO.: PRA6-Boring C
SHEET 1 OF 1

APPENDIX G

Worksheet for Site-Specific Calculated Background Value for Arsenic (CBVA) Determination

II. BACKGROUND CALCULATION

Arsenic Results in Background Samples

a = 10.6 mg/kg
b = 5.8 mg/kg
c = 13.5 mg/kg

n = number of sample results

Background Arsenic Level Calculation

[(a + b + c)/n] x 2 = Background Arsenic Level (BAL), Calculated

[(10.6 + 5.8 + 13.5)/3] x 2 = BAL, Calculated

(29.9/3) x 2 = BAL, Calculated

9.966 x 2 = BAL, Calculated

19.93 mg/kg = BAL, Calculated

III. COMPARISON TO HIGHEST BACKGROUND RESULTS

BAL, Calculated	vs.	Highest Background Result
19.93 mg/kg	vs.	13.5 mg/kg

SITE SPECIFIC BACKGROUND ARSENIC LEVEL = 19.93 mg/kg

*Note: Calculations based on: "Data Collection and Evaluation, Human Health Risk Assessment Bulletin, No. 2, Supplemental Guidance to RAGs," Office of Technical Services, U.S. EPA Region IV, October 1996